

4

Lesson Exemplar For Science

Quarter 1

Week

5

Lesson Exemplar in Science Grade 4

Quarter 1: Week 5

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Published by the Department of Education
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MATATAG K to 10 Curriculum Weekly Lesson Log	School	Grade Level	4
	Name of Teacher	Learning Area	Science
	Teaching Dates and Time	Quarter	I



	DAY 1	DAY 2	DAY 3	DAY 4
I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES				
A. <i>Content Standards</i>	The chemical properties of materials determine their uses.			
B. <i>Performance Standards</i>	By the end of the quarter, learners will describe the chemical properties of materials and changes in them. They will demonstrate an understanding that scientific processes can solve everyday problems and use creativity and determination to provide examples. They exhibit objectivity and open-mindedness in gathering information related to environmental issues and concerns in the community.			
C. <i>Learning Competencies</i>	The learners shall be able to demonstrate ways to minimize harmful changes in materials, such as restrictions on the burning of waste materials and care in handling reactive materials.	The learners shall be able to demonstrate ways to minimize harmful changes in materials, such as restrictions on the burning of waste materials and care in handling reactive materials.	The learners shall be able to demonstrate ways to minimize harmful changes in materials, such as restrictions on the burning of waste materials and care in handling reactive materials.	The learners shall be able to demonstrate ways to minimize harmful changes in materials, such as restrictions on the burning of waste materials and care in handling reactive materials.
D. <i>Learning Objectives</i>	At the end of the lesson, the learners should be able to 1. make an inventory of the hazardous materials at home and in school. 2. describe the harmful effects of hazardous materials.	At the end of the lesson, the learners should be able to: identify the non-biodegradable waste generated at home and school. group the non-biodegradable materials into plastic, glass, metal, textile, paper, and cardboard.	At the end of the lesson, the learners should be able to 1. identify biodegradable wastes commonly generated at home, in school and in the community. 2. suggest methods to convert biodegradable wastes into fertilizer	At the end of the lesson, the learners should be able to 1. describe their immediate surroundings or community in terms of location, waste segregation practices, garbage collection, and barangay environmental advocacies

	<p>3. identify ways to avoid the harmful effects of hazardous materials.</p> <p>4. suggest alternatives for the hazardous materials and burning of waste materials</p>	<p>suggest ways to reduce the amount of non-biodegradable materials in the garbage using the 5Rs"</p>	<p>(School and Household setting).</p> <p>3.participate in the waste segregation practices in school and community to minimize harmful changes in materials.</p>	<p>2.represent the observations in their immediate communities or surroundings through drawings, statements, spoken poetry, and others based on talents and abilities</p>
E. <i>Instructional Design framework feature (s)</i>	<p>Connection (Linking to practical applications), Engage (Capturing Learners' Interest), Explore (Gathering Information)</p>	<p>Ideational (Conceptual Understanding), Connection (Linking to practical applications), Engage (Capturing Learners' Interest), Explore (Gathering Information)</p>	<p>Ideational (Conceptual Understanding), Connection (Linking to practical applications), Engage (Capturing Learners' Interest),</p>	<p>Ideational (Conceptual Understanding), Connection Linking to practical applications), Engage (Capturing Learners' Interest)</p>
F. <i>21st Century Skills</i>	<p>Information, Media and Technology Skill (Visual Literacy Information) Learning and Innovation Skills (Reflective Thinking Critical Thinking)</p>	<p>Information, Media and Technology Skill (Visual Literacy Information) Learning and Innovation Skills (Critical Thinking and Creativity) Communication Skill (Collaboration)</p>	<p>Information, Media and Technology Skill (Visual information literacy) Learning and Innovation Skills (Critical Thinking) Communication Skills (Teamwork & Collaboration) Life and Career Skill (Resilience and Adversity management)</p>	<p>Information, Media and Technology Skill (Visual information literacy) Learning and Innovation Skills (Critical Thinking) Life and Career Skill (Resilience and Adversity management)</p>
II. CONTENT	Materials and Their Uses	Materials and Their Uses	Materials and Their Uses	Gathering Scientific Information
A. <i>References</i>				
B. <i>Other Learning Resources</i>	<p>Oregon State University. (2020). Hazardous products in the home (Chapter 6). Retrieved from</p>	<p>GeeksforGeeks. (2004). Biodegradable and non-biodegradable. Retrieved from https://www.geeksforgeeks.o</p>	<p>Bernardo, E. (2002). Solid-waste management practices of households in Manila, Philippines.</p>	<p>Gamao, R., & Caelan, M. (2023). Implementation and challenges of solid waste management in</p>

	https://fa.oregonstate.edu/sites/fa.oregonstate.edu/files/recycling/resources/MR_Class/chapter_6_hazardous_products_in_the_home.pdf	rg/biodegradable-and-non-biodegradable	https://doi.org/10.1196/annals.1454.016	communities of a component city in the Philippines. <i>Technium Social Science Journal</i> .
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IV. TEACHING AND LEARNING PROCEDURES

Before/Pre-Lesson Proper

<p><i>Activating Prior Knowledge</i></p>	<p>The teacher will perform this activity.</p> <p>Show bottles or containers of products with 'Danger', 'Warning', and 'Caution' labels, such as pesticides, toilet bowl cleaners, and air fresheners, and ask if the learners have similar items at home. The teacher can ask the learners on how these items are handled and stored in their homes.</p>	<p>The teacher will prompt the learners to:</p>  <p>Study the picture below and answer the guide questions."</p> <p>Guide questions:</p> <ol style="list-style-type: none"> 1. What are the things you see in the picture? 2. What kind of materials are these? Explain your answer. 	<p>The teacher will provide balls with words written on them that correspond to names of wastes. There will be two waste bins, 'biodegradable' and 'non-biodegradable', and the learners with the ball will shoot it to the appropriate waste bin.</p> <div style="display: flex; justify-content: space-around;"> <div style="background-color: yellow; padding: 5px; border: 1px solid black;">Biodegradable Waste</div> <div style="background-color: blue; padding: 5px; border: 1px solid black;">Non-biodegradable Waste</div> </div>	<p>The teacher will do this activity:</p> <p>Strategy: Stop, look, and Tell</p> <p>The teacher will group the learners into 5 and will tell a story about the pictures below:</p> <p>Group 1</p> 
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Group 2





Group 3



Group 4



				<p>Group 5</p> 
<p><i>Lesson Purpose/Intention</i></p>	<p>The teacher will ask the learners:</p> <p><i>What do you think are the dangers of these materials that you have at home?</i></p> <p>Hazardous materials that are found at home can be replaced by alternative materials that cannot harm people.</p> <p><i>Can you think of alternative materials that serve the same purpose?</i></p>	<p>The teacher will confirm that these wastes are non-biodegradable materials. The teacher will then ask the learners:</p> <p>What are non-biodegradable materials? What can we do with them?</p>	 <p>The teacher will ask: What is the message you get from the picture?</p> <p>The teacher will process the learners' answers in the manner that the lesson purpose will be communicated to the learners.</p>	

The learners will do the activity below.

Activity: Fill in the Blank

Fill in each blank with the correct word to complete the statement. Choose the answer from the box.

- a. impact
- b. pollution
- c. biodegrade
- d. contaminate

1. Throwing trash on the ground causes _____, which makes our air and water dirty and harms animals.

2. When you bury leaves and fruit peels in the ground, it will _____ and turn into soil.

3. Throwing trash on the ground causes _____, which makes our air and water dirty and can harm animals.

4. Pollution from factories can have a big _____ on the environment, making the air dirty and

The learners will answer the activity which is which.

- Biodegradable
- Non-biodegradable



_____ 1. Materials which undergo decay and decomposition.

_____ 2. Materials cannot be decomposed or broken down by microorganisms and other living organisms.

The teacher will conduct the activity: Match and Tell."

Match the pictures with the words and give your idea about the word and the picture.



	<p>harming plants and animals.</p>		  <ul style="list-style-type: none"> ● scavengers ● respondents ● composting ● household ● recyclable 	
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During/Lesson Proper

<p><i>Reading the Key Idea/Stem</i></p>	<p>The teacher will prompt the learners to read the story. Title: Impact of Hazardous Materials on the Environment</p>	<p>The teacher will prompt the learners to read the story. Title: Maya’s Journey of the Five Rs</p>	<p>The teacher will prompt the learners to read the article/story. Title: Solid-Waste Management Practices of Households in Manila, Philippines</p>	<p>The teacher will prompt the learners to read the article/story. Title: The Highly Urbanized Region</p>
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When we use materials like pesticides, paints and solvents, household cleaners, polishes and waxes, and automotive products, it's important to consider their impact on the environment and our health. Some ingredients in these products can release harmful chemicals into the air, affecting the atmosphere. Similarly, these products can contaminate water sources like rivers and oceans, harming plants, animals, and humans. Additionally, the production, use, and disposal of certain products can contribute to land pollution, leading to habitat loss and soil contamination.



Once upon a time, there lived a young girl named Maya. Maya loved exploring the natural wonders around her home, but she couldn't help but notice the growing presence of litter hindering the beauty of her surroundings. Maya, determined to make a difference, embarked on a journey to learn about the 5 Rs of non-biodegradable materials."

Non-biodegradable materials can be recycled, reduced, recovered, reused, and refused.

Reduce: As Maya wandered through the town's market, she noticed vendors selling fruits and vegetables wrapped in layers of plastic.



The experiences and practices of household waste management of people in a barangay (village) in Manila, Philippines are documented. The data were gathered through an interview with household members using open-ended questions. Interviews were also conducted with garbage collectors as well as scavengers. Results showed that the households generated an average of 3.2 kg of solid waste per day. The types of wastes commonly generated are food/kitchen wastes, papers, plastic bottles, metals, and cans, boxes/cartons, glass



According to the National Capital Region (NCR) Population Clock, the estimated population as of January 31, 2024, 8:00 AM is 13,978,060. The area, with this population, is a busy place with a high volume of vehicles, houses, buildings, and cemented grounds.

The region is overfilled with households, buildings and concrete pavements with barely any open space for planting or vegetation. Daily human activities generate waste. Approximately 13,978,060 individuals produce almost one (1)

	<p>Moreover, some ingredients in these products can pose risks to human health, especially if they accumulate in our bodies or the environment over time. It's important to understand whether a product is biodegradable or if it persists in the environment.</p> <p>Since everything we do impacts the world around us, it's essential to be mindful of the products we use and how we use them, striving to minimize our negative impact on the environment and maintain a balanced environment.</p>	<p>Determined to reduce waste, Maya approached the vendors and suggested using biodegradable packaging or selling produce without any wrapping at all. With Maya's encouragement, the vendors embraced the idea of reducing unnecessary packaging, setting a positive example for others in the community.</p> <p>Reuse: On her way home, Maya stumbled upon an abandoned warehouse filled with discarded items. Instead of seeing them as trash, Maya saw potential. She gathered broken furniture, old jars, and scraps of fabric, envisioning ways to breathe new life into them. With a little creativity and a lot of determination, Maya transformed the forgotten objects into beautiful decorations and useful household items, demonstrating the power of reuse to her neighbors.</p> <p>Recycle: As Maya continued her journey, she encountered a group of children playing near a recycling center. Curious, Maya joined them as they sorted through bins of glass, plastic, and paper, learning about the importance of recycling.</p>	<p>bottles, cellophane/plastics, and yard/garden wastes. The respondents segregate their waste into plastic bottles, glass bottles, and other waste (mixed waste).</p> <p>No respondents perform composting. Burning of waste is not done by the respondents. The households rely on garbage collection by the government.</p> <p>Collection is done twice daily, except Sundays, and household members bring their garbage when the garbage truck arrives. However, there are those who dump their garbage in the non-designated pick-up points, usually in a corner of the street. The dumped garbage becomes a breeding ground for disease-causing organisms. Some household respondents said that it is possible that the dumping in certain areas caused the dengue fever suffered by some of their family members. Mothers and</p>	<p>kilogram of waste materials while transport vehicles emit gaseous pollutants. With these occurrences, environmental issues and concerns arise. Campaigns for environmental actions through advocacies are being conducted such as proper waste segregation, urban gardening, clean-up drive, estero-watch, and Pasig River rehabilitation to name a few. These practices will help reduce the effects of rapid urbanization and the amount of waste and improve air quality. Each barangay in the city within the National Capital Region is taking steps to address the environmental issues and concerns.</p> <p>Questions: 1. Cite examples of practices in your community to address environmental issues and concerns.</p>
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		<p>Inspired by their enthusiasm, Maya organized a recycling drive in her community, encouraging everyone to collect and recycle their waste. Together, they turned trash into treasure, paving the way for a cleaner, greener future.</p> <p>Recover: One day, while exploring the forest, Maya stumbled upon an old tire abandoned in a clearing. Determined to find a use for it, Maya enlisted the help of her friends to brainstorm ideas. After much deliberation, they decided to repurpose the tire into a colorful flower planter, filling it with soil and seeds. As the flowers bloomed, the tire became a symbol of creativity and ingenuity, inspiring others to look at waste in a new light.</p> <p>Refuse: Finally, Maya realized that the most powerful way to combat non-biodegradable materials was to refuse them altogether.</p> <p>Maya encouraged her community to say no to single-use plastics. And so, armed with the knowledge of the 5 Rs, Maya and her community worked</p>	<p>household helpers are responsible for household waste management. Scavengers generally look for recyclable items in the dumped garbage. All of them said that it is their only source of income, which is generally not enough for their meals. They are also aware that their work affects their health. Most respondents said that garbage collection and disposal are the government's responsibility. The results of the study showed that RA 9003, also known as the Ecological Solid Waste Management Act of 2000, is not fully implemented in Metro Manila.</p> <p>Sources: Bernardo, E. 2002 Solid-Waste Management Practices of Households in Manila, Philippines. https://doi.org/10.1196/annals.1454.016Citations : 16</p>	<p>2. Based on the general description of the National Capital Region, what similar issues does your place/location experience?</p>
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		<p>together to protect the environment they cherished. Through their actions, they proved that even the smallest individual efforts could make a big difference in the fight against non-biodegradable materials. Together, they embarked on a journey of sustainability, leaving behind a legacy of stewardship and responsibility for generations to come</p>		
<p><i>Developing Understanding of the Key Idea/ Stem</i></p>	<p>The teacher will ask the learners:</p> <ol style="list-style-type: none"> 1. What are some examples of hazardous materials that are mentioned in the article? 2. What are the possible negative effects of these hazardous materials to the environment and to humans?" 3. What might happen if we will not be conscious of the ingredients of the products we are using? <p>The teacher will mention that since these materials can be hazardous, we can</p>	<p>The teacher will ask the learners:</p> <ol style="list-style-type: none"> 1. How did Maya promote the concept of "Reduce" in her community, and what impact did it have? 2. What did Maya and her friends do with the old tire they found in the forest, and how did it contribute to their mission?" 3. How will you segregate these non-biodegradable materials using 5Rs? <p>The teacher will ask the learners to bring pictures of the materials listed in the box.</p>	<p>The teacher will ask the learners:</p> <p>Guide Questions:</p> <ol style="list-style-type: none"> 1. What are the potential health risks associated with improper waste disposal, such as dumping garbage in non-designated areas, as observed in the barangay in Manila? 2. How can the implementation of RA 9003, the Ecological Solid Waste Management Act of 2000, be improved to ensure better waste management practices in Metro Manila households? 	<p>The teacher will ask the learners to do the activity.</p> <p>How can proper waste segregation practices help in reducing the amount of waste produced in the National Capital Region?</p> <p>In what ways can urban gardening contribute to reusing materials and improving the environment in the densely populated areas of the National Capital Region?</p> <p>From the assignment given in the previous meeting, the teacher will</p>

use their alternatives instead. The teacher will then show demonstration on:

- removing stain in clothes using calamansi or kamias extract
- removing coffee stain using moist salt or baking soda
- Using toothpaste in removing crayon mark
- using vinegar as disinfectant

Newspapers	magazines
cardboard	boxes
packaging materials	junk mail
plastic bottles	containers
Bags	packaging materials
disposable utensils	glass containers
bottle jars	aluminum cans
tin cans	steel
food containers	metal packaging materials
old clothing	linens
towels	other textile products
sold computers	televisions
cell phones	kitchen appliances

- A. Make a collage and group them as:
- a. paper and cardboard
 - b. plastics
 - c. glass
 - d. metals
 - e. textile

To keep the attention of the learners, the teacher will ask the learners to look for a partner and they will do the “fast talk”.

The learners will choose who will be the interviewer and the interviewee before they start the “Fast Talk”

Items for the “Fast Talk”:

1. Most “yucky” waste ___
2. Attractive waste _____
3. Recyclable waste _____
4. Biodegradable or non-biodegradable? Why?

After the fun-filled activity the teacher will ask the following:

1. What is the so-called “yucky waste?” Why is it that it is undesirable?
2. What are the attractive wastes? Why is it attractive to you?
3. Give examples of recyclable waste.
4. Why are they called recyclable?

facilitate the sharing of learners on the description of their immediate surroundings or community in terms of location, waste segregation practices, garbage collection, and barangay environmental advocacies. Write Yes in the row to describe the location of the community you live in or reside in.

Community Location	Yes/No
Near a busy road	
Near the estero	
Near the material recovery facility	
Within the heavily populated community	
Near a body of water (river, sea)	

Put a check mark in the row that corresponds to the schedule of garbage collection in your place.

			<p>5. Which one is easier to manage, biodegradable waste or non-biodegradable waste? Explain.</p>	<table border="1"> <tr> <td>Garbage Collection</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>everyday</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Every other day</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Twice a week</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Weekly</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Others, please specify</td> <td><input type="checkbox"/></td> </tr> </table> <p>Put a check mark in the row that tells the place where you observe and practice waste segregation.</p> <table border="1"> <tr> <td>Waste Segregation</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>House</td> <td><input type="checkbox"/></td> </tr> <tr> <td>School</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Community</td> <td><input type="checkbox"/></td> </tr> </table> <p>Put a check mark in the row that shows the environmental advocacy/ies or activities being implemented/done in your barangay.</p>	Garbage Collection	<input checked="" type="checkbox"/>	everyday	<input type="checkbox"/>	Every other day	<input type="checkbox"/>	Twice a week	<input type="checkbox"/>	Weekly	<input type="checkbox"/>	Others, please specify	<input type="checkbox"/>	Waste Segregation	<input checked="" type="checkbox"/>	House	<input type="checkbox"/>	School	<input type="checkbox"/>	Community	<input type="checkbox"/>
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				<table border="1"> <tr> <td>Environmental Advocacy</td> <td>✓</td> </tr> <tr> <td>Urban Gardening</td> <td></td> </tr> <tr> <td>Clear-Up Drive</td> <td></td> </tr> <tr> <td>Waste Segregation</td> <td></td> </tr> <tr> <td>Estero Clean Up</td> <td></td> </tr> <tr> <td>River Watch /Rehabilitation</td> <td></td> </tr> <tr> <td>Others, please specify _____</td> <td></td> </tr> </table>	Environmental Advocacy	✓	Urban Gardening		Clear-Up Drive		Waste Segregation		Estero Clean Up		River Watch /Rehabilitation		Others, please specify _____	
Environmental Advocacy	✓																	
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Others, please specify _____																		
<p><i>Deepening Understanding of the Key Idea/ Stem</i></p>	<p>The teacher will continue the discussion leading to the checklist that the learners will accomplish to identify the number of hazardous materials present in their homes.</p> <p>Hazardous Materials Checklist Put a check mark on the materials present in the household.</p> <p>1. ____ Liquid Bleach - DANGER! - Causes severe eye injuries. Can damage</p>	<p>The teacher will ask the learners to group the materials below using a table with the following headings.</p> <p>a. To be Recycled b. To be Reduced c. To be Recovered d. To be Reused e. To be Refused</p>	<p>At this point, the teacher will focus on the importance of handling materials properly, specifically, the waste materials which may undergo burning and reactions with other materials to minimize the harmful changes they may undergo.</p> <p>The teacher will ask the following questions. 1. Where do you dispose of or throw used batteries?</p>	<p>The teacher will process the answers in the previous activity:</p> <p>Guide questions: 1. Examine the answers in the table. What do you notice about your immediate environment and your classmate's immediate environment? Give the similarities and differences. 2. Using the information from what you have</p>														

	<p>the mouth, throat, and stomach. Vapor irritates the nose, throat, and lungs.</p> <p>2. __ Toilet Bowl Cleaner - DANGER! - Contains hydrochloric acid which is highly corrosive. Burns the skin, mouth, and throat. Causes blindness.</p> <p>3. ___ Furniture Polish - DANGER! - Contact with skin can dissolve vital skin oils and cause severe dermatitis (skin burns). Can permanently injure eyes.</p> <p>4. ___ Stainless Steel Cleaner - DANGER! -</p> <p>It can burn the eyes and skin. Its vapor can cause headaches, dizziness, and stupor</p> <p>5. ___ Aerosol Dusting Spray - DANGER! - Flammable. Irritates the eyes, lungs. 5,000 people visit emergency rooms each year with an aerosol can-related injury.</p> <p>6. ___ Disinfectant Cleaner - WARNING! - Contains flammable</p>		<p>2. What do you think will happen if the batteries are disposed of or thrown in the waste bin together with the other wastes?</p> <p>3. Have you observed a bad smell from a pile of waste materials? What causes the bad smell?</p> <p>4. How can we prevent this from happening?</p> <p>5. What can you do to make the biodegradable waste useful?</p>	<p>previously read, estimate the amount of waste generated per day in your house.</p> <p>3. Compare the frequency of garbage collection in your group with the other groups. What barangay has the regular garbage collection?</p> <p>4. Why do you practice waste segregation at home?</p> <p>5. Where do most of you practice waste segregation? Explain why.</p> <p>6. Based on your observations in your place, what environmental advocacy is most supported in your area? Explain its effect on your neighborhood.</p> <p>Note to the Teacher: <i>A Google drive sheet may be created if the school has strong internet connectivity, and the learners have gadgets.</i></p>
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	<p>propellants. Can burn skin and cause permanent corneal damage. Fumes can strongly irritate the nose, throat and lungs. Powdered Bleach - WARNING! - Breathing the dust can produce asthma-like symptoms. Damages eyes and skin. Mixing it with ammonia can produce deadly fumes.</p> <p>7.____ Aerosol Air Freshener - WARNING! - Contains highly flammable propellants. Can cause moderate irritation to the eyes. Can cause mild to moderate lung irritation, including asthma-like symptoms.</p> <p>8.____ Window Cleaner - WARNING! - Can cause moderate irritation and damage to eyes. Fumes can be moderately to highly irritating to the lungs. Can irritate the skin.</p> <p>9.____ All-Purpose Cleaner - WARNING! - Strong lung irritant. Can cause mild to moderate damage to the</p>			<p><i>For schools with low bandwidth access, the teacher may use sheets or any material to facilitate a visual presentation of the immediate environment. Teachers' creativity and innovativeness in presenting the lesson are encouraged.</i></p>
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	<p>eyes. Fumes can cause weakness and dizziness.</p> <p>10. ____ Pesticides- Warning: Exposure can occur through inhalation, skin contact, or ingestion, leading to symptoms such as headaches, dizziness, nausea, and respiratory issues.</p> <p>11. ____ Motor Oil Danger/Warning: Used motor oil contains hazardous substances such as heavy metals (lead, zinc, cadmium)</p> <p>The teacher will discuss the tips to protect the health of families and the environment from the harm caused by hazardous materials.</p> <ol style="list-style-type: none"> 1. Avoid household products marked "DANGER". 2. Reduce the need for pesticides. 3. Recycle motor oil. 4. Use less toxic cleaners. 5. Dispose of leftover hazardous products correctly 			
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After/Post-Lesson Proper

<p><i>Making Generalizations and Abstractions</i></p>	<p>The teacher will lead the learners to state the following ideas by asking the following questions.</p> <p>1. Why is it important to have an inventory of hazardous materials at home? <i>Ans. Inventory of hazardous materials at home helps us become aware of the potential harm they may cause.</i></p> <p>2. What are the benefits/disadvantages of having an alternative product to a certain hazardous material? <i>Ans. The use of alternative materials instead of hazardous materials safeguards our health and protects the environment while achieving the desired results.</i></p> <p>3. What are the simple ways to avoid the harmful effects of hazardous materials? <i>Ans. There are simple ways to avoid the harmful effects of hazardous materials, such as avoiding household products</i></p>	<p>The teacher will lead the learners to state the following ideas by asking the following questions.</p> <p>1. Describe non-biodegradable materials. <i>Ans. Non-biodegradable materials are substances that do not break down or decompose naturally over time through the action of microorganisms, bacteria, fungi, or other biological processes</i></p> <p>2. How can you group the non-biodegradable materials? <i>Ans. Non-biodegradable materials can be grouped into plastic, glass, metal, textile, paper, and cardboard.</i></p> <p>3. What can we do with non-biodegradable materials? <i>Ans. Non-biodegradable materials can be recycled, reduced, recovered, reused and refused.</i></p>	<p>The teacher will lead the learners to state the following ideas:</p> <p>1. Unsegregated waste materials produce gases with foul odors."</p> <p>2. Improperly disposed used batteries react with other materials, causing soil, water, and air contamination.</p> <p>3. Waste segregation minimizes harmful changes in materials.</p> <p>4. Composting makes biodegradable waste useful. During composting, biodegradable waste reacts with air and water in the presence of microorganisms to produce fertilizer.</p>	<p>The teacher will lead the learners in realizing the following ideas: Highly populated areas generate more waste than the low populated areas.</p> <p>Waste segregation is not practiced regularly in the household and community.</p> <p>The quality of air depends on many factors, and one is location. If the area is near a busy road with a high population, the air quality is affected.</p> <p>The environmental advocacy that is most supported has the greatest impact in reducing environmental degradation."</p> <p>Note to Teachers: <i>The learners' generalization may vary based on their immediate environment.</i></p>
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	<p><i>marked 'DANGER'; reducing the need for pesticides; recycling motor oil; using less toxic cleaners; and disposing of leftover hazardous products properly."</i></p>															
<p><i>Evaluating Learning</i></p>	<p>List one hazardous material, two alternatives, and three tips to protect your family from the harm of the hazardous material.</p> <table border="1" data-bbox="443 619 831 1141"> <thead> <tr> <th>Hazardous Material/Product</th> <th>Alternatives</th> <th>Tips to protect your family and environment from the harm of the hazardous material</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Hazardous Material/Product	Alternatives	Tips to protect your family and environment from the harm of the hazardous material										<p>Read the following passage and answer the questions that follow. Choose the letter of the correct answer from the options provided.</p> <p>In a busy city, non-biodegradable materials overwhelm waste management systems, worsening the burden on landfills. Despite awareness campaigns, many residents continue to rely heavily on single-use plastics and disposable items. Recycling efforts fade due to inadequate infrastructure and indifference, leading to widespread littering and pollution. Local authorities struggle to cope with the crisis, resorting to costly measures like incineration, which further contribute to air pollution and greenhouse gas emissions. The once clean environment becomes full of plastic waste, clogging</p>	<p>Put a check mark (/) in the box if the statement is correct and X mark if the statement is incorrect.</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1. Improper disposal of used batteries is good for the environment. <input type="checkbox"/> 2. Composting makes the biodegradable waste useful. <input type="checkbox"/> 3. Waste segregation minimizes the harmful changes in materials. <input type="checkbox"/> 4. During composting, the reaction among the biodegradable waste, air, and water in the presence of microorganisms cause soil contamination. <input type="checkbox"/> 5. Properly segregated waste produces foul odor. 	<p>The teacher will motivate the learners to represent the observations in their immediate communities or surroundings through drawings, statements, spoken poetry, and others based on talents and abilities.</p> <p>Note: Please see the rubrics on the Answer key</p> <p>Note to Teacher: <i>Let the learners choose the strategy or ways on how they will present their output. This can be done per group.</i></p> <p><i>Use the appropriate rubric based on the manner the learners present their output.</i></p> <p><i>Please give more weight on the lesson objectives and the process the</i></p>
	Hazardous Material/Product	Alternatives	Tips to protect your family and environment from the harm of the hazardous material													

		<p>waterways and endangering wildlife.</p> <p>Efforts to reduce non-biodegradable waste face numerous obstacles, from resistance to behavioral change to economic constraints. Without urgent intervention and collective action, the city faces a big challenge to decrease the proliferation of harmful materials and lessen the environmental consequences.</p> <p>1. Based on the story, what increases the problem of wastes?</p> <ol style="list-style-type: none"> landfills full of biodegradable materials landfills full of non-biodegradable residents heavily rely on the use of single-use plastics and disposable items residents are using recyclable materials <p>2. Why do the city recycling efforts fade?</p> <ol style="list-style-type: none"> due to inadequate infrastructure due to costly measures like incineration due to obstacles and resistance 		<p><i>learners underwent in making their outputs.</i></p> <p><i>The groups' output should be preserved for the next day's class.</i></p> <p><i>Note: The activity will be done by group</i></p>
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		<p>d. due to the proliferation of harmful materials</p> <p>3. What immediate environmental problem is caused by non-biodegradable materials such as plastics wastes?</p> <p>I. air pollution II. water pollution III. land pollution IV. clogging waterways V. endangering wildlife</p> <p>a. I & II b. II & III c. III & IV d. IV & V</p> <p>4. What simple change can bring a positive impact on their problem on non-biodegradable materials?</p> <p>a. clean-up drive b. refusal of single-use plastics and disposable items c. reusing plastic bottles d. use of eco bag</p> <p>5. What is one of the main challenges faced by the city in managing non-biodegradable waste?</p> <p>a. Lack of public awareness campaigns b. Insufficient recycling infrastructure c. Overdependence on composting d. Excessive use of renewable materials</p>		
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<p><i>Additional Activities for Application or Remediation (if applicable)</i></p>		<p>The teacher can ask the students what they will change in their lifestyle or what measures they will observe to minimize their non-biodegradable waste.</p>	<p>Document your participation in waste segregation at home and in school. It can be as a journal entry or photo documentation.</p>	<p>Interview members of the family about their ideas and/or opinion on the different barangay environmental advocacies in your community.</p> <p>Note: The learner may present this in video, written form, or in any ways the learner can express to communicate the results of the interview.</p>
<p><i>Remarks</i></p>				
<p><i>Reflection</i></p>				

ANSWER KEY

DAY 1	DAY 2	DAY 3	DAY 4
<p>Activity 1.1</p> <p>1.What are some examples of hazardous materials that are mentioned in the article? Answers: Pesticides Paints and solvents Household cleaners Polishes and waxes Automotive products</p> <p>2.What are the possible negative effects of these hazardous materials to the environment and to humans? Environment: Air Pollution: Harmful chemicals released into the air can degrade air quality and contribute to atmospheric pollution. Water Pollution: Contaminants from these products can enter water sources, such as rivers and oceans, harming aquatic plants and animals, and potentially disrupting entire ecosystems. Land Pollution: Improper disposal or spillage can lead to soil contamination, habitat loss, and adverse effects on land-dwelling organisms. Humans:</p>	<p>Activity 2.1</p> <p>1. How did Maya promote the concept of "Reduce" in her community, and what impact did it have? Maya advocated for reducing waste by encouraging vendors in the market to use biodegradable packaging or sell produce without wrapping.</p> <p>2. What did Maya and her friends do with the old tire they found in the forest, and how did it contribute to their mission? Maya and her friends repurposed the old tire into a colorful flower planter, symbolizing creativity</p> <p>3.How will you segregate these non-biodegradable materials using 5Rs? Reduce: a. Avoid purchasing products with excessive plastic packaging. b. Encourage vendors and manufacturers to use biodegradable or minimal packaging.</p>	<p>Activity 3.1</p> <p>1.What are the potential health risks associated with improper waste disposal, such as dumping garbage in non-designated areas, as observed in the barangay in Manila? a. Dumping garbage in non-designated areas can lead to the spread of diseases like dengue fever. b. Waste piles attract pests such as rats and insects, which can carry diseases. c. Improper waste disposal can contaminate water sources, affecting health</p> <p>2.How can the implementation of RA 9003, the Ecological Solid Waste Management Act of 2000, be improved to ensure better waste management practices in Metro Manila households? a. Teach people about proper waste segregation and disposal. b. Ensure strict rules and penalties for illegal dumping. c. Provide more recycling centers and composting options. d. Ensure consistent and reliable garbage collection services.</p>	<p>Activity 4.1</p> <p>1.Cite examples of practices in your community to address environmental issues and concerns. a.Proper Waste Segregation: Households and schools separate their waste into biodegradable and non-biodegradable bins to facilitate recycling and proper disposal. b.Urban Gardening: Community members participate in urban gardening projects, planting vegetables and flowers in small spaces, such as balconies and rooftops, to promote greenery and improve air quality. c.Clean-Up Drives: Regular community clean-up drives are organized to pick up litter from streets, parks, and public spaces, helping to keep the environment clean. d.Estero-Watch: Local groups monitor waterways (esteros) to ensure they remain clean and free of pollutants, preventing water contamination and flooding. e. Pasig River Rehabilitation: Involvement in the Pasig River</p>

<p>Health Risks: Exposure to harmful chemicals can cause immediate health issues like respiratory problems, skin irritation, and long-term effects such as chronic illnesses or cancers.</p> <p>Bioaccumulation: Certain chemicals can accumulate in the human body over time, potentially leading to serious health conditions.</p> <p>Indirect Effects: Contamination of food and water sources can lead to ingestion of harmful substances.</p> <p>3. What might happen if we will not be conscious of the ingredients of the products we are using?</p> <p>a. Lack of awareness and proper management can lead to higher levels of pollution in air, water, and soil, exacerbating environmental degradation.</p> <p>b. Continuous exposure to harmful chemicals without knowledge can lead to chronic health issues and reduced quality.</p> <p>c. Persistent and non-biodegradable chemicals can disrupt ecosystems, leading to loss of biodiversity and ecological imbalances.</p> <p>d. Greater environmental contamination can result in</p>	<p>Reuse:</p> <p>a.Repurpose old jars as storage containers, convert broken furniture into creative home decor, or use fabric scraps for DIY projects.</p> <p>Recycle:</p> <p>a.Sort and process non-biodegradable waste materials so they can be remade into new products.</p> <p>b.Collect and separate glass, plastic, and paper, then take these items to a recycling center or participate in community recycling drives.</p> <p>Recover:</p> <p>a.Extract useful substances or energy from non-biodegradable waste.</p> <p>b. Turn an old tire into a flower planter, use waste-to-energy processes to convert plastic waste into fuel, or create art pieces from discarded materials.</p> <p>Refuse:</p>	<p>Activity 3.2</p> <p>Question: Where do you dispose of or throw used batteries?</p> <p>Used batteries should be disposed of at designated battery recycling centers or drop-off locations.</p> <p>Question: What do you think will happen if the batteries are disposed of or thrown in the waste bin together with the other wastes?</p> <p>Answer: If batteries are disposed of in regular waste bins, they can end up in landfills where they may leak harmful chemicals into the soil and groundwater.</p> <p>Question: Have you observed a bad smell from a pile of waste materials? What causes the bad smell?</p> <p>Yes, the bad smell from a pile of waste materials is caused by the decomposition of organic matter such as food waste. This process produces gases like methane and hydrogen sulfide, which contribute to the foul odor.</p> <p>Question: How can we prevent this from happening?</p>	<p>rehabilitation projects, such as tree planting along the riverbanks and removing debris from the river, to restore its natural state.</p> <p>2.Based on the general description of the National Capital Region, what similar issues does your place/location experience?</p> <p>a. Like the NCR, our community generates a significant amount of waste daily, leading to challenges in waste management.</p> <p>b. With many buildings and cemented areas, there is a lack of open spaces for planting and vegetation, impacting air quality and extreme heat.</p> <p>c. The high number of vehicles on the roads contributes to air pollution, affecting the health of residents.</p> <p>d. Waterway Pollution: Local rivers and streams often suffer from pollution due to improper waste disposal and industrial activities, like the issues faced by the Pasig River.</p> <p>Activity 4.2</p> <p>Answers may vary</p>
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increased regulatory measures and cleanup costs, burdening society and the economy

Activity 1.2

1. ✓
2. ✓
3. ✓
4. ✓
5. ✓
6. ✓
7. ✓
8. ✓
9. ✓
10. ✓
11. ✓

a. Avoid using non-biodegradable materials altogether.

b. Say no to single-use plastics, such as straws, bags, and utensils.

c. Choose products made from sustainable materials, and support businesses that prioritize environmentally friendly practices.

Activity 2.2

Collage will be rated by the teacher using the rubrics below

Criteria	4	3	2	1
Content	Content is clear, detailed and highly relevant	Content is clear and relevant with some details	Content is somewhat clear and relevant but lacks details	Content is unclear or irrelevant
Creativity	Demonstrated exceptional creativity and originality	Demonstrates good creativity and originality	Demonstrates some creativity and originality	Lacks creativity and originality
Presentation	Presentation is highly engaging and well-organized	Presentation is engaging and organized	Presentation is somewhat engaging and organized	Presentation is not engaging and disorganized
Participation	Shows outstanding effort and participation	Shows good effort and participation	Shows some effort and participation	Shows minimal effort and participation

a. Paper and Cardboard

- Newspapers
- Magazines
- Cardboard
- Boxes
- Junk mail
- Packaging materials (if made of paper)

To prevent bad smells from waste materials, proper waste management practices should be implemented. This includes separating organic waste for composting.

Question: What can you do to make the biodegradable waste useful?

Answer: Biodegradable waste can be composted to produce nutrient-rich soil conditioner for gardening and agriculture.

1. What is the so-called “yucky waste?” Why is it that it is undesirable?

"Yucky waste" is food/ kitchen waste. It is undesirable because it can rot, smell bad, and attract pests.

2. What are the attractive wastes? Why is it attractive to you?

Attractive wastes are glass bottles. They are attractive because they can be shiny and colorful.

3. Give examples of recyclable waste.

Examples of recyclable waste include plastic bottles, paper, glass bottles, and metal cans

	<p>Food containers (if made of paper or cardboard)</p> <p>b. Plastics Plastic bottles Containers (if made of plastic) Bags (plastic) Packaging materials (if made of plastic) Disposable utensils Food containers (if made of plastic)</p> <p>c. Glass Glass containers Bottle jars</p> <p>d. Metals Aluminum cans Tin cans Steel Metal packaging materials Food containers (if made of metal) Computers (metal components) Televisions (metal components) Cell phones (metal components) Kitchen appliances (metal components)</p> <p>e. Textile Old clothing Linens Towels Other textile products</p> <p>Activity 2.3 Recyclable Newspapers Magazines Cardboard Boxes</p>	<p>4. Why are they called recyclable? <i>They are called recyclable because they can be processed and turned into new products instead of being thrown away.</i></p> <p>5. Which one is easier to manage, biodegradable waste or non-biodegradable waste? Explain. <i>Biodegradable waste is easier to manage because it breaks down naturally over time, reducing the amount of waste in landfills. Non-biodegradable waste, like plastics, takes a long time to decompose and can harm the environment.</i></p>	
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	<p>Packaging materials (if they are made of paper, plastic, or metal)</p> <p>Junk mail</p> <p>Plastic bottles</p> <p>Containers (plastic, glass, or metal)</p> <p>Aluminum cans</p> <p>Tin cans</p> <p>Steel</p> <p>Glass containers</p> <p>Bottle jars</p> <p>Food containers (if they are made of recyclable materials)</p> <p>Metal packaging materials</p> <p>Computers</p> <p>Televisions</p> <p>Cell phones</p> <p>Kitchen appliances</p> <p>Reduced</p> <p>Packaging materials (minimize the use of excessive packaging)</p> <p>Disposable utensils (reduce use by opting for reusable options)</p> <p>Junk mail (opt out of unnecessary subscriptions)</p> <p>Old clothing and other textile products (reduce purchasing by reusing or repurposing)</p> <p>Recovered</p> <p>Metal packaging materials (can be processed to extract valuable metals)</p> <p>Food containers (if they contain certain types of recyclable plastic or metals)</p>		
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	<p>Electronics (computers, televisions, cell phones, and kitchen appliances can be processed to recover valuable components and materials)</p> <p>Reused</p> <p>Cardboard (reuse for storage or crafts)</p> <p>Boxes (reuse for storage or moving)</p> <p>Containers (reuse for storage, planting, or crafts)</p> <p>Bags (reuse for shopping or storage)</p> <p>Bottle jars (reuse for storage or crafts)</p> <p>Old clothing, linens, and towels (reuse as rags, crafts, or donate to charity)</p> <p>Refused</p> <p>Disposable utensils (opt for reusable utensils instead)</p> <p>Single-use packaging materials (choose products with minimal or no packaging)</p> <p>Junk mail (opt out of unnecessary subscriptions)</p>		
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Rubrics for the assessment on Activity 2.2

Criteria	4	3	2	1
Content	Content is clear, detailed and highly relevant	Content is clear and relevant with some details	Content is somewhat clear and relevant but lacks details	Content is unclear or irrelevant
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