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DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for TLE

Quarter 2
Lesson
5

Lesson Exemplar for TLE Grade 7
Quarter 2: Lesson 5 (Week 3)
SY 2024-2025

Development Team

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TLE/QUARTER 2/ GRADE 7

I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES	
A. Content Standards	The learners demonstrate an understanding of the concepts and skills in agri-crops and animal production.
B. Performance Standards	After this lesson, learners are expected to perform agricultural practices in crop production based on industry standards.
C. Learning Competencies and Objectives	**Learning Competency** • Explain farm waste processing; and • Perform basket composting and foliar fertilizer fermentation **Lesson Objectives:** 1. Compare and contrast different farm waste that needs to be managed; 2. Understand clearly how farm waste are properly processed; 3. Perform basket composting and foliar fertilizer fermentation at home or in school; and *4.* Appreciate the importance of proper waste management in the farm.
D. Content	Farm Waste Management and Actual Performance of Basket Composting and Foliar Fertilizer Fermentation
E. Integration	Proper farm waste management when properly applied will turn to a profitable and useful livelihood activities for farmers and the community.

II. LEARNING RESOURCES
Fawler, A. (2022, June 22). Foliar fertilizers: what is foliar spray and how do you make it?. https://tinyurl.com/yckwh4f5 Moral, L.I. Jr., (2016) Technology and Livelihood Education Series. Three R's in solid waste management.p.73. Phoenix Publishing House. NoAW No Agricultural Waste. (2020, January). *NOAW 2020 - Exploitation of Untapped Potentials of Agricultural Wastes* [Video]. YouTube. https://www.youtube.com/watch?v=VGnYsMhsWuU The Millennial Farmer PH. (2020, August). *How to make a foliar fertilizer? | Let's go organic! | The Millennial Farmer PH* [Video]. YouTube. https://www.youtube.com/watch?v=Sz9TlLOjsDM United States Department of Agriculture [USDA],(2011) Agricultural waste management handbook. Agricultural waste management system. https://tinyurl.com/2cwsrx5d

III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	**DAY 1** **1. Short Review: Picture Analysis** **Direction:** Identify some proper ways of taking care of the crops in the farm 1.1  1.2  1.3  1.4  1.5  **2. Feedback** Do you still have other queries or clarification about our previous lessons?	The teacher will ask the students to analyze the photos and identify ways how to take care of the plants or crops in the farm. **Answer key:** **1.** Weeding **2.** Watering the plants **3.** Cultivating the soil **4.** Exposing the plants to sunlight. **5.** Applying fertilizer to the plants or crops.
B. Establishing Lesson Purpose	**1. Lesson Purpose** NoAW No Agricultural Waste. (2020, January). *NOAW 2020 - Exploitation of Untapped Potentials of Agricultural Wastes* [Video]. YouTube. https://www.youtube.com/watch?v=VGnYsMhsWuU  **2. Unlocking Content Vocabulary** Can somebody from the class define what is WASTE MANAGEMENT in your own words and understanding?	The teacher could choose either will play the videos showing exploitation of untapped potentials of agricultural waste, or simply ask the students to describe the two photos posted showing wastes in the farm. Then connect the video being watched or the photos being described on the day's topic lesson.

- **Aerobic Composting** – decomposing of organic materials using microorganisms that require oxygen. It requires the introduction of oxygen to the compost pile to allow aerobic microbes to thrive. Aerobic composting needs to be turned very few days to allow for proper air circulation. This composting process is best used outside and can be used with a large amount of materials.

https://aerobiccomposting.peatix.com/

- **Agricultural Waste** - is unwanted or unsalable materials produced wholly from agricultural operations directly related to the growing of crops or raising of animals for the primary purpose of making a profit or for a livelihood.
- **Anaerobic Composting** – decomposes waste without oxygen. Organic materials are piled up and breakdown naturally. This process does not need any type of maintenance and do not need to be turned.
- **Compost** – is used to improve the soil fertility in gardens, landscaping, horticulture, agriculture and organic farming.
- **Composting** - the natural process of recycling organic matter, such as leaves and food scraps, into a valuable fertilizer that can enrich soil and plants.

https://www.slideshare.net/slideshow/solid-waste-management-

- **Waste** - is any substance which is discarded after primary use or in other words, there is no further use for the product. We generate a huge amount of wastes in our everyday life.
- **Waste Management** - refers to the various ways of managing and disposing of wastes. It can be by discarding, destroying, processing, recycling, reusing, or controlling wastes.
- **Waste Processing** – is a way of applying operations using facilities on how to change solid wastes into chemical, physical, or biological properties to make it easier to dispose of, recover a resource, or transfer solid waste materials.

C. Developing and Deepening Understanding	**SUB-TOPIC 1: Farm Waste Processing** **1. Explicitation** What are the different agricultural waste management system's six basic functions? **2. Worked Example** Discuss and explain to the class clearly the waste management system's six basic functions. **1. Production** - is the function of the amount and nature of agricultural waste generated by an agricultural enterprise. The waste requires management if the quantity produced is sufficient enough to become a resource concern. A complete analysis of production includes the kind, consistency, volume, location, and timing of the waste produced. **2. Collection** - refers to the initial capture and gathering of the waste from the point of origin or deposition to a collection point. The method of collection, location of the collection points, scheduling of the collection, labor requirements, necessary equipment or structural facilities, management and installation costs of the components, and the impact that collection has on the consistency of the waste should be identified. **3. Transfer** - refers to the movement and transportation of the waste throughout the system. It includes the transfer of the waste from the collection point to the storage facility, to the treatment facility, and to the utilization site. **4. Storage** - is the temporary containment of the waste. The storage facility of a waste management system is the tool that gives the manager control over the scheduling and timing of the system functions. **5. Treatment** - is another function designed to reduce the pollution potential or modify the physical characteristics of the waste, such as moisture and total solid (TS) content, to facilitate more efficient and effective handling. Manure treatment is comprised of physical, biological, and chemical unit processes. It also includes activities that are sometimes considered pretreatment, such as the separation of solids.	The teacher will explain to the class the six basic functions of agriculture waste management in the farm.

	6. **Utilization** - Utilization includes reusing and/or recycling of waste products. Agricultural wastes may be used as a source of energy, bedding, mulch, organic matter, or plant nutrients. When properly treated, they can be marketable. **3. Lesson Activity** Students are going to watch videos on how to properly managed agricultural wastes. IGESjapan. (2018, July). Developing a Waste Management Strategy: Transforming Waste from Problem to Resource [Video]. YouTube. https://www.youtube.com/watch?v=ItPO_Wq6dm8 (23 min.) **Questions to ponder:** 1. Any reaction from the videos we just watched a while ago? 2. As a grade 7 students, how do you think you can help reduce waste in your home, in school and in your community? **(To apply what the students learned during the lesson, a supplemental activity will be given. See worksheet #1 for the activity which students will accomplish.)** **DAY 2 - 3** **SUB-TOPIC 2: Types of Wastes** **1. Explicitation** What are the different types of wastes? **2. Worked Sample** Agricultural wastes are various wastes produced in the agricultural field. Example: cattle waste, weed, husk, etc. **3. Lesson Activity** **Different Types of Waste** 1. **Liquid Waste** - is commonly found in households as well as in industries. This waste includes dirty water, organic liquids, wash water, waste detergents and even rainwater. 2. **Solid Rubbish** - Solid rubbish can include various items found in your household, along with commercial and industrial locations. Solid rubbish	The teacher will show a video showing how to properly managed different forms of wastes.

	is commonly broken down into the following types: **a. Plastic waste** – consists of plastic bags, containers, jars, bottles and other products that can be found at home. Plastic is not biodegradable, other types of plastic can be recycled. Take note that plastic should not be mixed in with your regular waste; it should be sorted and placed in your recycling bin. **b. Paper/card waste** – includes packaging materials, old newspapers, used cardboard and other products. Paper can easily be recycled and reused, so place them in your recycling bin and think of the best way how you can use those as your materials in creating something saleable out of it. **c. Tins and metals** – can be found in various forms throughout your home. Most metals can be recycled. It can be recycled and used in making some display materials at home like creating flower vase, small lampshade etc. **d. Ceramics and glass** – These items can easily be recycled. Look for special glass and bottles and can create them into something useful like sugar, coffee, and cream containers. **3. Organic Waste** - Organic waste is another common household. All food waste, garden waste, manure and rotten meat are classified as organic waste. Over time, organic waste is turned into manure by microorganisms. **4. Recyclable Rubbish** - Recyclable rubbish includes all waste items that can be converted into products that can be used again. Solid items such as paper, metals, furniture and organic waste can all be recycled. **5. Hazardous waste** includes all types of flammables, toxic, corrosive and reactive rubbish. It also includes radioactive waste and chemical wastes. Example: paints, batteries, light bulbs, fluorescent tubes, pesticides, weed killers, gas bottles, chemical fertilizers, etc. **6. Industrial waste**- Industrial waste is any type of waste that is produced by an industrial process. This can include manufacturing, construction and mining processes. This is a broad category that can include anything from asbestos and clinical waste to oil and chemicals. **SUB-TOPIC 3: How to Make Basket Composting at Home or in School** **1. Explicitation** 1. What are the materials needed in making a basket compost at home? 2. How do we pile the waste materials in a basket for composting?	Actual making of Basket composting.

3. Why do we need to try making our own basket composting?

2. Worked Sample

The teacher may actually demonstrate how basket composting is done.

Materials Needed for Basket Composting:

- Used plastic water container (removed upper part of it by cutting using a cutter or pair of scissors).
- Prepare dried leaves taken from your backyard.
- Rotten produce, like vegetables and fruit peeling
- Eggshells
- Soil
- Water
- Hand trowel
- Disposable hand gloves

Procedures in Making Basket Compost:

1. Prepare all the materials needed for basket composting.
2. Separate dried leaves, peeling of fruits and rotten produce.
3. In a plastic container put some soil in the bottom part of it.
4. Add rotten produce like dried leaves, fruit peeling, eggshells and rotten vegetables and pile it as the next layer. Alternately add the soil and the prepared rotten produce until it reaches the top part of the plastic container.
5. And water the compost pile placed in the water container, wait until the piled compost decomposed.

3. Lesson Activity

After the teacher were able to demonstrate how to make basket composting, student will then perform their individualized basket compost.

Rubrics in Rating Student's Outputs of Basket Compost:

Criteria	Well-followed (5 points)	Not Followed (4 points)	Needs Improvement (3 points)	Rating
Brought all the needed materials				

Scoring Rubric must be explained first before the return demonstration of the students on how to make their individual basket composting activities.

Guide to compute: Raw score/Highest possible score x 100. Ex. 19/20 * 100 = 95

Demonstrate the proper way of piling the compost materials				
Were able to work safely				
Maintain workplace clean				
Total				

SUB-TOPIC 4: How to make Fermented Foliar Fertilizer

1. Explicitation

1. What are the materials needed in making fermented foliar fertilizer in school or at home?
2. How do we properly make fermented foliar fertilizer?
3. Why do we need to try making a fermented foliar fertilizer?

2. Worked Example

The students will watch videos on how to make a fermented foliar fertilizer. After watching the videos, students may now proceed with their individual outputs.

The Millennial Farmer PH. (2020, August). How to make a foliar fertilizer? | Let's go organic! | The Millennial Farmer PH [Video]. YouTube. https://www.youtube.com/watch?v=Sz9TlLOjsDM (10 min.).

Materials needed in making a fermented foliar fertilizer

- 1 ripe banana (lakatan)
- 1 apple
- few pieces of grapes (optional)
- ¼ kilos or 250 grams brown sugar
- 1 spoon for mixing the mixtures
- Plastic container with cover
- Clean chopping board
- Knife

Procedures in Making a Fermented Foliar Fertilizer

1. Prepare all the needed ingredients, materials and tools in making a foliar fertilizer.

2. On a clean chopping board, slice the banana and apple approximately 1/8"combine and weight at 250 grams.
3. Put in a clean plastic container the 1st mixture and add ¼ kilo or 250 grams of brown sugar. Combine 1st mixtures and sugar, must be 1:1 ratio, mix thoroughly, repeat mixing the 1st combined mixtures with sugar several times until it blends well.
4. Once the combined mixtures are already thickened and blends well. Seal it with a tightly closed container and do not forget to indicate the date when you actually prepared the sliced fruits and sugar, so that you will be able to determine when it will achieve 7 days or weeklong fermentation required days.
5. After 7 days of fermentation, you can now check if it resulted well and ready to be used as organic fertilizer to your flowering plants or other form of plants or crops.
6. To check, you open the container then, sift the juice that was formed from the fermented mixtures.
7. You can now make a mixture for spraying it on the plants (1 tsp. of fermented fruit juice foliar fertilizer plus 100ml. clean water. Then shake the mixture that was placed in a bottle sprayer.
8. You can now spray it on the plant, use it as an organic fertilizer that will help your plants develop and grow healthy.
9. Monitor and document if the plants you were able to apply foliar fertilizer developed and grow successfully (by taking pictures with corresponding dates on your recorded documentation as a proof).
10. Show and report to your teacher the results of your outputs through submitting your portfolio of documentation with narratives as your proofs for proper rating.

3. Lesson Activity
Checklist of how fermented foliar fertilizer is done.

Directions: Put a check (/) if you were able to correctly follow its proper sequence or the steps that was mentioned above. Put an (/) on the part of NO if you forgot or was not able to follow the procedures correctly. Please refer to the table below.

Equivalents of Yes Responses:
10 = 100
9 = 95

	Note: Please answer as honest as you are. **Steps Involved in Making Fermented Foliar Fertilizer** | **Yes** | **No** **1.** Prepare all the needed ingredients, materials and tools in making a foliar fertilizer. **2.** On a clean chopping board, slice the banana and apple approximately 1/8" combine and weight at 250 grams. **3.** Put in a clean plastic container the 1st mixture, add ¼ kilo or 250 grams of brown sugar, mix thoroughly until it blends well. **4.** Once the combined mixtures are already thickened and blends well. Seal it with a tightly closed container. Indicate the date when you prepared the Foliar Fertilizer mixtures to determine when it will be checked after 7 days of fermentation process. **5.** After 7 days of fermentation, you can now check if it resulted well and ready to be used as organic fertilizer. **6.** To check, you open the container then, sift the juice that was formed from the fermented mixtures. **7.** You can now make a mixture for spraying it on the plants (1 tsp. of fermented fruit juice foliar fertilizer plus 100ml. clean water. Then shake the mixture that was placed in a bottle sprayer. **8.** You can now spray it on the plant, use it as an organic fertilizer that will help your plants develop and grow healthy **9.** Monitor and document if the plants you were able to apply foliar fertilizer developed and grow successfully (by taking pictures with corresponding dates on your recorded documentation as a proof). **10.** Show and report to your teacher the results of your outputs through submitting your portfolio of documentation with narratives as your proofs for proper rating.	8 = 90 7 = 85 6 = 80 5 = 75 4 = 70 3 = 65 2 = 60 1 = 55 0 = Non- performance (No Output)
D. Making Generalizations	**DAY 4** **1. Learners' Takeaways** This can be done by asking the students form a sentence based on the posted words on the board. Ex. Proper, care, water, pile, aeration, composting, profitable. **2. Reflection on Learning**	The teacher will post the following words on the board and ask some students to construct a sentence from the given words to express the learnings gained from the day's lesson.

	1. Why do we need to properly manage our home and farm wastes? 2. Why it is best advice to use organic fertilizer on our plants or crops?	

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION				**NOTES TO TEACHERS**
A. Evaluating Learning	**DAY 4** **1. Formative Assessment** **A. Sequencing** **Directions:** Arrange the following steps in making a basket composting in proper sequence. Write your answer on the space provided in each item. A for the 1st step, b for the second step, and so on. _____1. And water the compost pile placed in the water container, wait until the piled compost decomposed. _____2. Prepare all the materials needed for basket composting. _____3. In a plastic container put some soil in the bottom part of it. _____4. Separate dried leaves, peeling of fruits and rotten produce. _____5. Add rotten produce like dried leaves, fruit peeling, eggshells and rotten vegetables and pile it as the next layer. Alternately add the soil and the prepared rotten produce until it reaches the top part of the plastic container. **B. Essay** Answer the question intelligently. (5pts) 1. Why do you think you have the responsibility as individuals, to reduce waste in your home, school and community? **2. Homework (Optional)**			**Answer Key**: 1. e 2. a 3. c 4. b 5. d The teacher concern will be the one to rate the responses made by the students on the essay part. To compute for the equivalent: Raw score/Highest Possible Score multiply by 100.
B. Teacher's Remarks	*Note observations on any of the following areas:*	**Effective Practices**	**Problems Encountered**	The teacher may take note of some observations related to the effective practices and

	strategies explored			problems encountered after utilizing the different strategies, materials used, learner engagement and other related stuff. Teachers may also suggest ways to improve the different activities explored/ lesson exemplar.
	materials used			
	learner engagement/ interaction			
	others			
C. Teacher's Reflection	*Reflection guide or prompt can be on:* ▪ *<u>principles behind the teaching</u>* *What principles and beliefs informed my lesson?* *Why did I teach the lesson the way I did?* ▪ *<u>students</u>* *What roles did my students play in my lesson?* *What did my students learn? How did they learn?* ▪ *<u>ways forward</u>* *What could I have done differently?* *What can I explore in the next lesson?*			Teacher's reflection in every lesson conducted/ facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.