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DepED
DEPARTMENT OF EDUCATION

Lesson Exemplar for TLE

Quarter 2
Lesson
4

Lesson Exemplar for TLE Grade 7
Quarter 2: Lesson 4 (Week 2)
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.
B. Performance Standards	The learners perform agricultural practices in crop production based on industry standards.
C. Learning Competencies and Objectives	**Learning Competencies** • Discuss care and maintenance of crops; • Discuss harvesting and post-harvesting practices; and • Perform agricultural practices in crop production. **Learning Objectives** 1. Determine the different practices in caring and maintaining the various crops; and 2. Determine the various harvest and post-harvesting practices.
D. Content	• Crop Care and Maintenance • Harvesting and Post-Harvesting Practices
E. Integration	**SDG 1:** No Poverty, **SDG 2:** Zero Hunger, **SDG 3:** Good Health and Well-being, **SDG 11:** Sustainable Cities and Communities, **SDG 12:** Responsible Consumption and Production, **SDG 13:** Climate Action

II. LEARNING RESOURCES

Bituin, A., et al. (nd) *Learning Modules in Agri-fishery Arts.*Batangas State University-Balayan Campus.

Encyclopædia Britannica, inc. (2023). *Care of crops during growth*. Encyclopædia Britannica. https://www.britannica.com/topic/vegetable-farming/Care-of-crops-during-growth

GeeksforGeeks. (2022). *Basic practices of crop production - soil preparation, irrigation*. GeeksforGeeks. https://www.geeksforgeeks.org/basic-practices-of-crop-production/

GeeksforGeeks. (2023). *Types of crops and factors affecting crop production*. GeeksforGeeks. https://www.geeksforgeeks.org/types-of-crops/

Walia, M. K. (2021). Basics of crop management - University of Nevada, Reno. https://naes.agnt.unr.edu/PMS/Pubs/2021-4103.pdf

III. TEACHING AND LEARNING PROCEDURE		NOTES TO TEACHERS
A. Activating Prior Knowledge	**Day 3** **1. Short Review** **Diagnostic Test**: Students will take the 10-item diagnostic test about various practices on crop care and maintenance. 1. Which of the followings factors helps the plants to produce their own food through photosynthesis? a. Water c. Seed/Seedlings b. *Sunlight* d. temperature 2. This factor influence the growth of the plant by irrigation to maintaining the moisture in the soil. a. *Water* c. Seed/Seedlings b. Sunlight d. temperature 3. Providing the primary needs of the plants such as cultivation, fertilizer, irrigation, application of pesticides, weed control, provision of support is generally referred to as _____. a. Harvesting c. *Crop care and maintenance* b. Post harvesting d. Pre-production 4. Providing trellis to the crawling and climbing plants is a way of _____. a. *Provision of support* c. Application of pesticides b. Application of fertilizer d. Weed control 5. This crop care and maintenance helps loosens the hardened soil around the plant. Large acres of farms use mechanical aids in plowing and harrowing. a. Weed control c. Pests and Diseases Control b. *Cultivation* d. Irrigation 6. This practice is being carried out if the soil is deprived of nutrients. a. Storage c. *Fertilizer Application* b. Harvesting d. Pests and Diseases Control 7. _____ is done when crops reach maturity and it influences the quality of produce. a. Post harvesting c. Storage	Lesson 2.2-3 may extend one more session from the succeeding week. The 10-item diagnostic test can be used to help students recall their knowledge on the crop care and maintenance taken during their elementary days. This activity can measure the students' previous learning experience that will give feedback on how the teacher delivers the lesson. The teacher may use google form, kahoot app, quizziz app or any assessment forms that is easy and accessible to use. The teacher may follow the suggested guided inquiry technique as a form of review. **Answer Key:** 1. b 2. a 3. c 4. a 5. b 6. c 7. b 8. d 9. a 10. d

	b. *Harvesting* d. temperature 8. This postharvest practice classifies the produce according to their size, shape, color and ripeness. a. Selling c. Packaging b. Harvesting d. *Grading* 9. When produce are sold through retail or whole sale, this postharvest practice is called _____. a. *Selling* c. Packaging b. Harvesting d. Grading 10. To ensure proper moisture of the seeds sown, the depth should be _____. a. 0.5- to 1-inch c. 2- to 2.5-inch b. 1- to 1.5-inch d. 1.5- to 2-inch **Guided Inquiry:** Students are asked with the following questions. 1. Can you name factors that influence the growth of the plants? What are those? 2. What should be considered in crop production? Can you name pre-production, production, and postharvest practices? 3. Which of these practices have you observed done by your parents or farmers in your community, or done in your own backyard garden or field? 4. Why should a farmer be knowledgeable on the various practices in crop production? **2. Feedback (Optional)**	
B. Establishing Lesson Purpose	**1. Lesson Purpose: Picture Talk** **Direction**: Show the following pictures to the students. Let them share their insights on the proper care and maintenance of the agricultural crops.	The teacher may use the suggested activities to activate their critical and creative thinking skills based on their observation on the illustrations presented.

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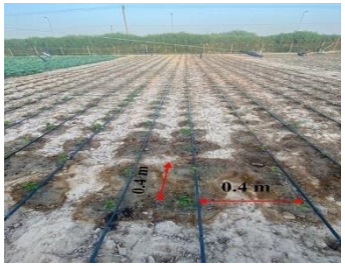

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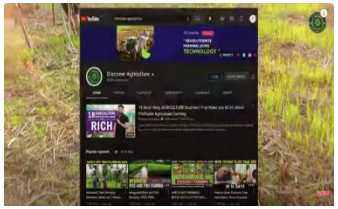
2. Unlocking Content Vocabulary

The following terms are used in the entire lesson. Defining them will guide the students to better understand the lesson.

- **Crops**- These are plants or plant-produce that can be raised, cultivated and harvested for subsistence or profit. They may be classified as food crops, cash crops, forage crops, oil crops, industrial crops, fiber crops, and ornamental crops.

	• **Pesticides-** These may be natural/organic or commercial products that control the widespread of pests and diseases in the agricultural field. • **Irrigation-** It is the process of maintaining the moisture and water content of soil needed for the plant growth. • **Herbicides-** These may be natural/organic or commercial products that control the widespread of weeds in the field. • **Cultivation-** This is the process of loosening the hardened soil through plowing or harrowing. It is believed to control weeds and pests in the farm. • **Fertilizer -** These may be natural/organic or commercial products applied to increase the nutrients into the soil. • **Trellis-** These may be made from wood or metal that serves as support for climbing and crawling crops.	
C. Developing and Deepening Understanding	**SUB-TOPIC 1: Crop Care and Maintenance** **1. Explicitation** **Farm Benchmarking:** Students will watch video clips on the proper care and maintenance of crops. After which, each student will find a learning buddy and will answer the guide questions that follow.  **Crop Care and Maintenance** https://www.youtube.com/watch?v=4qEfSQqDy1M  **Crop Care and Maintenance** https://www.youtube.com/watch?v=-8TgRilpXh4  **Tomato Crop Care and Maintenance** https://www.youtube.com/watch?v=BSwPovTayxw **Guide Questions:** 1. What are the different practices in caring and maintaining of crops shown in the video? Enumerate each from pre-production to harvesting if necessary.	The teacher will utilize the video clip watching as a strategy to benchmark gardens or farms that observes proper care and maintenance of crops. In the event that the video is too long, the teacher will skip some parts to highlight the main idea of the lesson. The expert group session may be done in order to allow students to walk around from one station to another to learn from various experts. The experts from each group will have a final and general presentation of output to conclude the activity. The teacher will use a scoring rubric to assess the students' outputs. The holistic rubric given may be used by the teacher or

2. Why is it significant for farmers to be knowledgeable in the proper care and maintenance of crops?

2. Worked Example

Expert Farmer's Group. This is a follow up activity from the previous one. From the sharing of the learning buddies, students now shift to expert farmer's group. They will form their own group to discuss the various proper care and maintenance of crops. The teacher will assign each group a particular crop care and maintenance practice. (E.g. G1: Seedbed preparation, G2: Weed Control, etc.) Each member of each group will be given time to share what s/he learned from the learning buddy session.

Then, each group will select two experts. These two experts will summarize what will transpire in the discussion. All experts will convene and discuss with other experts their assigned task while the members prepare the materials for presentation. Afterwards, the two experts from each group will stay on their own station as they wait from other groups' members to visit their station. As soon as there are visitors, the experts will explain the crop care and maintenance. The members will go around to the different stations.

The teacher will assess the students based on the following criteria:

Criteria	Percentage
Content	30%
Organization	30%
Presentation	30%
Overall Impact	10%
Total	**100%**

Reading Resources

Types of Crops

There are six categories of crops: food crops, feed crops, fiber crops, oil, crops, ornamental crops, and industrial crops.

Type of Crops	Description
Food Crops	This is primarily raised, cultured, and harvested for human consumption. It may be classified as field crops or root crops.

may opt to use ana-holistic rubric for a more specific determination of components to be evaluated.

In the lesson activity, the teacher will inform the students in advance the output they will have to produce at the end of the lesson.

To assess the outputs of the students, the teacher will use a scoring rubric to objectively evaluate the garden and portfolio, audio-visual presentation.

	Field crops are grown on a large scale for commercial purposes. This includes fruits and vegetables, wheat, rice, corn, sugarcane. **Root crops** are underground plant parts for human consumption. E.g. carrot, sugar beet, turnip, potato, peanut, radish, etc.
Cash Crops	This type of crops is sold for profit. It can be exported to other countries as well. E.g. coffee, cocoa, sugarcane, and other exportable crops
Feed/Forage Crops	This type of plant is usually raised, cultured, and harvested for livestock consumption. E.g. corn, pasture grasses
Fiber Crops	This type of plant is usually raised, cultured, and harvested for its fibers to be used as a raw material. E.g. cotton, abaca, banana/pineapple fiber
Oil Crops	This type of plant is usually raised, cultured, and harvested for production of oil. E.g. sugarcane, palm tree, coconut, etc.
Ornamental Crops	This type of plant is usually raised, cultured, and harvested for decorations in the garden and landscape projects. E.g. orchids, rubber tree, bougainvillea, rose
Industrial Crops	This type of plant is usually raised, cultured, harvested, and processed by industries for the production of non-edible materials. E.g. tobacco

Crops are also classified according to growth habits: This includes herb, vine, liana, shrub, tree, evergreen, and deciduous. In addition, these crops may be considered as annual, biennial, or perennial crops.

There are many variables that influence crop production. These include water, soil, wind, temperature, sunlight, seed selection, knowledge, and crop care and maintenance. It is deemed important to consider these factors as they affect the growth of the plant and as well as the produce/harvest.

	Crop production is a process because it involves several steps wherein farmers should take precautionary measures at each step. The farmers should also consider the external conditions and factors to achieve bountiful harvest. Thus, farmers should have sufficient knowledge in crop care and maintenance. The practices of crop care and maintenance are as follows: **1. Cultivation.** This is the first stage of crop production. Cultivation refers to the stirring the soil through plowing or harrowing. Cultivating the soil is one of the most effective way to control weeds and pests. Cultivating the soil loosens the soil around the plant which provides air for the root of the plants. This technique is called conventional tillage. Reduced or no-tillage can lead to accumulation of soil carbon, consequently benefitting soil health and improving crop yields. **2. Seed sowing/Planting seedlings.** Good quality and healthy seeds and seedlings should be considered prior to sowing, and planting, respectively. Correct depth of soil of 1.5 to 2 inches deep is important for sowing seeds to ensure proper moisture. In sowing the seeds or planting the seedlings, farmers should consider the proper spacing to allow plants on its optimal growth. **3. Irrigation.** Crops require water because water prevents crops from drying out especially during drought. However, the amount of water differs from each variety of crops. There are various ways in which farmers irrigate the crops: manual, drip, and sprinkler irrigation. **Manual irrigation** is labor-intensive and time-consuming method which uses laborers to irrigate water using water cans. **Drip irrigation** is the most effective way to supply water and nutrients to crops. It provides water and nutrients directly to the zone of plants in proper amount and proper time. **Sprinkler irrigation** uses pipes and spray to irrigate the whole field. **Pipelines** may be used when water is scarce to eliminate water losses. Finally, soil and plant factors determine the irrigation requirements of the crops. **4. Fertilizer Application**. If the soil is deprived of nutrients, it requires management of nutrient such as application of fertilizers, manures, and compost to enrich the soil content. There are methods of fertilizer application: scattering and mixing with the soil before planting.	

5. Weed Control. Weeds lead to the reduction of crop yield, increased production costs, and increased incidence of pests and diseases. To control weeds, methods employed including: hand weeding, mechanical cultivation, application of pesticides. ***Manual weeding/hand weeding*** is time-consuming and labor-intensive method. Laborers uses their hands and or sickle/scythe to remove weeds. ***Mechanical weeding*** uses machineries to remove weeds such as cono-weeder, power tiller, basket hoe. ***Chemical weeding*** uses herbicides to remove seeds. They may be considered selective or non-selective herbicides. **Selective herbicides** aim the weeds only with effect to the crops while ***non-selective herbicides*** harm both main crops and the weeds. Thus, skill is needed to applying this kind of herbicide.

6. Pests and Diseases Control. To drive away pests, farmers apply pesticides. There are different varieties of pesticides and each of them has a particular function. This includes herbicides, insecticides, fungicides, molluscicides, and rodenticides. However, farmers are encouraged to employ eco-safe and eco-friendly ways to control pests and diseases. This may include production of organic pesticides and encouragement on the presence of organisms that kills pests.

7. Support for Climbing plants. There is a need to provide support for climbing and crawling plants such as bitter gourd, squash, string beans. Trellis may be made or wood or metal.

3. Lesson Activity

Making a Garden: Students will create their own garden. Subject to the availability of space, students may opt to use recycled containers such as old pails, basins, and other available containers at home to create a containerized garden. Students may also wish to explore hydroponics if the teacher or the parents have sufficient knowledge on this type of crop production. If the school garden is available, it is better to utilize it as a laboratory room for this lesson.

Students will document the various practices they will employ on the proper care and maintenance of crops. At the end of this long term activity, the students will submit a portfolio of their own garden that narrates what they have done. The portfolio contains the following:

a. Narrative Report (Introduction, Body, and Conclusion), and

b. Photo documentations and captions

Day 3

SUB-TOPIC 2: Harvesting and Post-harvesting Practices

1. **Explicitation**
   Farm Benchmarking 2: Students will watch video clips about some practices on harvesting and post-harvesting crops.

Harvesting Fruits and Vegetables
https://www.youtube.com/watch?v=PVWu673D6jw

Harvesting Vegetables in containerized Garden
https://www.youtube.com/watch?v=z3XgVoUu98E

Harvesting, Postharvesting & Storage
https://www.youtube.com/watch?v=BprFCEEVxvs

Banana Post-harvesting
https://www.youtube.com/watch?v=xLMe1R7BHfI

Guide Questions

1. Based on the video watched, what are the criteria that indicates plants are ready to harvest?
2. What are the some of the practices in harvesting crops?
3. What are some of the practices in post-harvesting crops?
4. Why do we need to process the crops after harvest?

2. **Worked Example**
   Based on the previous activity, students will present their outputs. The teacher will ask follow-up questions if necessary.

Reading resources

Harvesting and Preservation. Farmers harvest when crops reach maturity. Farmers have various ways to gather and harvest crops such as traditional technique and modern ways. This stage of the development of vegetables when harvested influences the quality of produce. There are factors that determine the harvest date of the crops such as genetic composition of the vegetable variety, planting date, and environmental conditions.

Manual harvesting is employed through the use of mechanical tools such as sickle/scythe for broccoli, cabbage, cauliflower. Some vegetables are **mechanically harvested.**

Changes in the post-harvest are influenced by various factors such as kind of crop, temperature, oxygen and carbon dioxide content, relative humidity, and disease-incitant organisms. Storing the produce contributes price stabilization. It also contributes to the preservation of the produce.

Vegetable storage should consider the following parameters: free from mechanical, insect, and disease injury, and matured crops.
There are changes that occur on the produce such as water loss, conversion of starch and sugar, flavor changes, color changes, toughening/ softening, vitamin gain/loss, sprouting, rooting, and decay. These deteriorates the quality of produce. So, proper storage is needed.

Common (unrefrigerated storage) and cold (refrigerated storage) are methods to store vegetables. There is a lack of precise control of temperature and humidity in common storage. This uses insulated storage houses, outdoor cellars, or mounds. Cold storage, on the other hand, allows precise regulation of temperature and humidity, and maintenance of constant conditions with the use of refrigeration.

Premarketing operations and selling. This stage involves washing, trimming, waxing, precooling, grading, prepackaging, and packaging.

- ***Precooling*** involves rapid removal of heat from freshly harvested vegetables, slows natural deterioration of the produce, slows the growth of decay, and retards water loss. This includes: hydrocooling, contact icing, vacuum cooling, cooling, and air cooling. Hydrocooling is done by cooling the produce

by direct contact with cold water flowing through the packed containers. Contact icing uses crushed ice placed in the package or spread over a stack of packages to precool the contents. Vacuum cooling produces rapid evaporation of small quantity of water that lowers the temperature of the crops. Air cooling is done through exposure of vegetables to cold air.

- ***Grading*** ensures that the crops are classified according to their size, shape, color, and ripeness. This establishes a good trade.
- ***Packaging.*** The products are placed in bags, trays, cartons, crates, and hampers of various kinds and sizes. This furnishes a convenient means for transport, loading, and stacking with security and economy space.
- ***Selling.*** Farmers sell their produce through retail or wholesale. Retail sales are done when consumers buy produce often though roadside stands. Wholesale marketing is made when produce is sold to retailers, commercial, institutional or other large-scale owners.

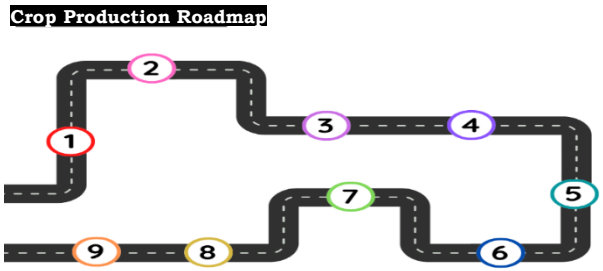
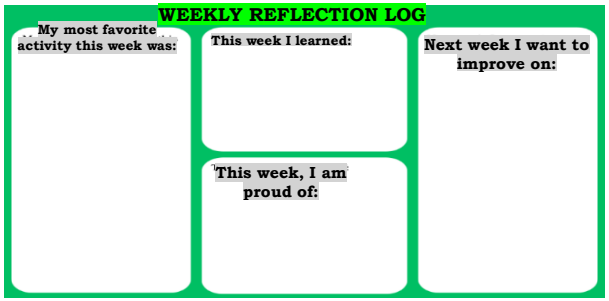
Other additional practices to increase crop productivity and farm profitability include:

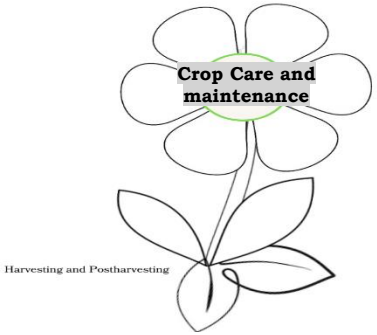
1. Increase crop diversity
2. Enhance beneficial pollinators population
3. Employ more eco-friendly weed control measures
4. Improve soil quality
5. Manage labor and input costs
6. Keep track of all the records including expenses and profit
7. Involve in creative marketing

3. Lesson Activity

Learning from the Expert Farmers: The students will interview at least three farmers about harvesting and post-harvesting methods employed. After which, the students will create a 5-6-minute video that summarizes the farmers' practices on harvesting and post-harvesting.

(To apply what the students learned during the lesson, an additional activity will be given. See worksheet # 1 for the activity which students will accomplish.)

D. Making Generalizations	**Day 4** **1. Learners' Takeaways** Students will accomplish the roadmap to show the various processes in crop production from pre-production to post-harvesting. After which, the students will explain their outputs.  **2. Reflection on Learning** The students will accomplish this weekly reflection log.  	The teacher will facilitate how the students will accomplish this section. The teacher will ensure that students will determine the major farm activities and briefly describe each. The teacher ensures to integrate the SDG concepts: SDG 1: No Poverty, SDG 2: Zero Hunger, SDG 3: Good Health and Well-being, SDG 11: Sustainable Cities and Communities, SDG 12: Responsible Consumption and Production, SDG 13: Climate Action. As the students reflects on their learning for this week, the students will accomplish the weekly learning log.

IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION		**NOTES TO TEACHERS**
A. Evaluating Learning	**1. Formative Assessment** The students will accomplish beautify the plant by supplying with various practices from pre-production to post-harvest. On the petal, they will write down the practices on proper care and maintenance. On the leaves, students will list down the practices on harvesting and post-harvesting. They may add additional petals and leaves if necessary.  	The teacher will ensure that students will target the objectives of the lesson. The students will present how they take care the plants until it is ready to harvest and market.

<table>
<tr><td></td><td colspan="3">2. Homework (Optional)</td><td></td></tr>
<tr><td rowspan="5">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="5">The teacher may take note of some observations related to the effective practices and 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.</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>
<tr><td>C. Teacher's Reflection</td><td colspan="3">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?</td><td>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.</td></tr>
</table>